14. Replanting of trees and forestry developing program, specially with trees having leaves eatable to animals.

15. Construction and reconstruction of roads between districts and main villages and Takhar province to facilitate trasnprotation of goods and products with the financial assistance of international donors/humanitarian organizations.

16. Provision of reforestation to avoide soil effosions.

STUDY ON THE NUTRITIONAL ASPECT OF BADAKHSHAN PROVINCE-FGHANISTAN

I. General information:

Badakhshan province is situated in north-east remote part of Afghanistan, because of its distent location from the center of this country and absence of adequate roads for transportation it has always been one of the backward provinces.

The geographical situation of the province is such that to the north it is bound to the republic of Tajekestan, to the east to Pakistan and the republic of people of China, to the south to the provinces of Konars and Laghman and to the west to Takhar province.

The altitude of Badakhshan province from the sea level is about 960-2800 meters, some parts like Pameer reaches up to 3000 m which is always covered by snow.

The majority of the population are Tajeks but a limited number of other tribes such as Uzbaks and Turkmans are also inhabitated there.

The center of the province is called Faizabad previously it involved 6 districts, sub-districts where as now is increased to 13 districts.

Even before 1978 the country development plans were not applied properly over there and during the war since 1978 the previous condition is still continued. To improve the situation many international humanitarian organizations, UN agencies as well as some NGOs such as UNDCP, UNHCR, UNICEF, WFP, WHO, Afghan Aid, NAC, SCA, and PRB have started/completed their rehabilitation and reconstruction programs and project covering different parts of the province.

The total area of the province is approximately 41490 km2 that involves totally 3000 villages with 80667 families existing, during 1990 the total population in the province was estimated around 554370 people.

For better understanding and to study the different aspects of areas the province is divided into 2 major parts on district basis.

A. The southern district of:

Jurm, Baharak, Faizabad, Gandum Ghul, Kishim

B. Northern district of:

Darwaz, Sheghnan, Shahere-bozurg, Khawahan, Ragh, Ishkashim, Wakhan, Zibak.

The district located in southern part covers the areas where mostly poppy is cultivated. As mentioned above many organization have implemented some appreciable work of thier concern including PRB.

The southern district have comparatively better food production but the cost is very high. Meanwhile there are some roads present but in a very bad condition, another main problem of this region is the occurrence of flood during the spring and summer season, as well as soil erosions with the destruction of forests. The considerable problem of the northern districts are mainly:

1. Absence of roads and ways for transportation.
2. Most of the land is rain-fed (not irrigatable).
3. Agricultural products are of very minor quantity.

It is also to be mentioned that the people belong to this region do not cultivate the poppy but they are used to utilize the opium.

PRB monitoring observation shows the socio-economic problems of the people in north is more than that of the southern districts because the distance in between districts is very far meanwhile there are no road or any mechanical transportation facilities, agricultural products are insufficient, there is much higher rate of malnutrition in children as well as in adults. It is also very sad to say that majority of population are used to opium.

There is a lot number of different domestic and wild animals but because of long winter and less feeding stuff the level of productivity is very low, veterinary services centers are not established. Prevention of animals against various infectious diseases requires more attention as the vaccines provided to PRB VFUs is not sufficient to reach the northern districts, more quantity of veterinary vaccines to be issued by the donor concerned.

Generally speaking the northern districts of Badakhshan need more attention of international donors for socio-economic development.

Agricultural products of Badakhshan are mostly wheat, oats, corn, potatoes, paddy, legumes and other vegetables and fruits, which are not enough to cover the need of the population.

The industrial products of Badakhshan are carpets, Rugs, Leather products, Woolen pieces and Handicrafts but are all in insufficient quantity.

The natural resources of the province includes forests, precious stones, gold, iron, copper, salt, etc unfortunately they are still in an original position and the resources have not been so far utilized.

Most of the schools are running actively, the number of educated and literated people in Badakhshan is more than any other province in the country. Specially the women have been educated in a considerable number who are now localized in there native places after finishing education in Kabul etc.

II. **Productive potential of Badakhshan province:**

Badakhshan is a mountainous area, although there are many rivers providing an adequate quantity of running water but because of higher level of arable land as compare to the low level of running water, mostly the water of these rivers are not suitable to be utilized for irrigating cultivating land, therefore the major parts of the area available for agriculture is rain-fed land which depends on the seasonal rainfall. It is also worth to mention that the higher price of fertilizer has no affect on the productivity of land.

The available area suitable for agriculture is very limited in Badakhshan province where as the land ownership ranges from 5-15 jeribs (1-3 hectares). Natural disasters like flood, drought, earthquakes, soil erosions etc has also an adverse effect on the production.

Total area of Badakhshan province cover 41490 km2 of which 905 km2 is forest, 2927 km2 is pasture, 1821 km2 is estimated to be suitable for the cultivation of agricultural products as well as vegetable and fruits. The remaining 35841 km2 is not utilizable for agricultural purposes as we calculate on percentage basis it will show that 2.17% is forest, 7% is pasture, 13.6% is suitable for cultivation of other crops, and fruits etc and 86.38% is waste land.

Compare to existing population in the area agricultural land is very little and by no means they could be self sufficient.

During 1976 UNDP/FAO had given a warning of food shortage in Badakhshan, even now the local production will be enough only for 1/3 of the population, an other 2/3 portion is purchased from markets. According to available information only about 20% population is self sufficient the rest of them that is 80% usually purchased their required food stuff. Out of 1/3 of self sufficient farmers, approximately 12% of their excess products is marketable. Usually the commodity required for consumption is transported from far distant villages carried by horses or donkeys covering days journey to be transported.

III. **Socio-economic situation:**

Nutritional status of food stuff which is the product of nature and human being utilize it to build up their body, this process is called nutrition and the materials used is called food. food is usually either from plants or animal sources otherwise on chemical basis it could also be divided on organic and inorganic origin for example, proteins, lipids carbohydrates and vitamins are of organic, water and mineral are of inorganic origin.

Adequate nutrition is a quantitatively and qualitatively better utilization of product. From this point of view the climatic condition in Badakhshan being cold and the area mountainous, having very little cultivated land compare to the number of population, therefore products are quantitatively very less, and can never cover the need for better nutrition.

The estimated statistic of the year 1967 in Badakhshan shows the following amount of food stuff in Kgs for each family in one year.

No. of persons in one family	Adults	Children	Wheat	Cereals	Cooking oil	Potatoes
12	8	4	800	240	80	640

Nowadays for each person in a family in one year it is calculated as wheat = 66 kg, cereal = 20 kg, cooking oils = 6.6 kg, potatoes = 53 kg where as if we calculate it for one day consequently it will be 180 grams 54.47 grams, 16.43 grams, and potatoes 145 grams.

These estimated products will be able to produce approximately 2300 calories, this amount of energy produced will be too little because a person who works for 8 hours a day 3000 calorie is required of which 1700 calories will be utilized for Basal Metabolism of the 1300 calories for total metabolism or activity metabolism. Shortage of calorie and exercising the routine activity which mostly forcibly to be done to maintain existence would lead for the utilization of body composition such as lipids, Carbohydrates and Proteins. This conditions now very much applicable to Badakhshan people that majority of the adults uses their body composition for the production of energy to work and therefore they are naturally getting lean, their working capacity reduces and looses resistance against many disease, lost the average range of life in such environment will be low with very high mortality rate. In general the outcome of such food shortage will cause malnutrition. In this regard UNICEF has given warning of malnutrition in children of Badakhshan during 1992 and shown the incidence of mortality 40-50 person/1000 persons with the extreme rated 110/1000 person.

It is a considerable point that nothing have mentioned about animal products in Badakhshan, although a huge number of animals due given in statistics. According to estimated statistics in 1967 the following number of animals are counted:

Human population	Arclinary sheep	Karagul sheep	Goats	Cattle	Buffaloes	Camel	Horse	Donkey	Poultry
486180	387770	2190	253210	173050	1090	760	21160	57310	220750

The Pamir Reconstruction Bureau has established three veterinary clinics in the districts of Faizabad, Baharak and Kishim since 1994, the animals head count is performed during 1994 by VFU personnel the following numbers are recorded.

	Popula tion	Cattle	Sheep	Goats	Horse	Donkey	Poultry
Faizabad	47020	24010	67048	30767	818	6163	29869
Kishim	19630	15483	20606	27715	719	5149	33518
Baharak	14800	14000	251966	155696	1269	8111	85208

Information based on personal communication states that a high number of animals in Baharak district includes those migrating animals who are moved place to place via Baharak in search of pasture during different seasons.

Since 1952 United Nations discuss the mater of food shortage and hunger in their annual sessions, all the member countries knows that 2/3 of the world population cannot receive the adequate food for their routine utilization, meanwhile it is also understood that most of the countries in Asia, Africa and South America are faced to such problems, although the natural resources in those countries are suitable for economic improvements but unavailability of proper technology and financial possibilities the resources are not so far put into utilization.

Nations thought of increasing the productivity, where as specific studies illustrated that the increase in productivity is not parallel to the increase in population rate as their is much increase in annual population compare to increase in annual productivity in terms of per capita consumption.

Mainly there are 2 factor involved in the increase of population.

1. Development of medical science by using effective medicines against total disease as well as successful prophylactic measures by using vaccines against many infectious diseases.

2. Not following family planning programs to avoid increase in birth rate

Prof. Samuel Brandy (1954) has explained the danger of population increase severe than that of cancer and draws the attention of nations to think of their future existence circumstances.

When we talk of adequate food it is the food of animal origin which is important in the development of body structure and mental health, keeping working capacity, resistance of body against many diseases etc. These food stuff includes meat, milk, egg and there products.

Statistical information from FAO shows the world is suffering from the shortage of above products, the results collected from research sources and its analysis shows that the routine requirement for adult human body is 35 gr protein from animal origin, FAO concerned reports also states that as an average each person receives only 27 gr of animal originated protein on worldwide basis, going into more details developed countries 44 gram, developing and undeveloped countries as an average of less than 10 gram/day/capita.

During 1967 this range in Afghanistan was accepted to be 14 gram and in Turkey it is said to be 17 gr/day/capita. In Pakistan annual meat production is 2 million MT and milk is 13.8 MMT, therefore as if the population is accepted to be around 120 million per capita protein consumption/day will reach to more than 25 gram from meat and milk only.

Proteins are made of Amino-acids, the number of these amino acids in the composition of different proteins reaches 25, of which 10 of them comes from animal proteins that is necessary for the development strengthening and resistance of human body. These are called essential amino acids, meanly taken from meat, milk and eggs.

If we compare the rate of production and consumption of food stuff, it is estimated that the rate of increase in human population is calculated 2.2 - 21.7% where the rate of increase in food materials in the world is only about 1%.

IV. **Analysis of the situation of shortage of food in Badakhshan:**

Based on literature available agricultural and livestock production in Badakhshan is too less compare to the density of population. This may be because of different factors such as:

A. Number of population:

Unfortunately till now there is no assured statistical data of population in Afghanistan, this will definitely have a negative effect on the implementation of socio-economic development planning program of the country.

There are different data available about the number of population in Badakhshan for example:

1. The data from the ministry of planning affairs in 1974 shows 486180 numbers.
2. Ministry of statistics states it 592000.
3. DPA 1986 mentioned 497758.
4. UNDP/OPS/UNOCHA 1992 published 554370.

B. Available land suitable for cultivation:

Badakhshan is a mountainous area agricultural land is too little. total available land of the province is said to be around 450000 hectares of which 192000 hectares is under cultivation that 42.7% of the total land is cultivable. Out of 42.7% agricultural land 17.18% is irrigated land and 82.8% is rain-fed land. It is also known that 6658 hectares land is for horticulture, over 96000 hectares forests and over 122000 hectares is pasture (operation SALAM-1989).

C. The insufficient agricultural products in Badakhshan is wheat, barely (oats), corn, legumes, paddy, potatoes, varieties of vegetables and fruits.

D. Badakhshan has very natural resources like precious stones, copper, lead, salt, gold etc but not yet utilized.

E. Quantitative evaluation of agricultural products based on data available during 1978 the product for each one jerib land calculated is 266 kg that is 1330 kg for each hectares from irrigated land.

Therefore from one side less area of cultivable land and from other side lesser product per unit area of land in compare with population proves the shortage of food stuff in the province.

Available information states that even before the war period 50% self sufficiency of the agricultural products was speculated; this got worst during war and still continues .

V. **Reasons for reduced productivity:**

1. Although Badakhshan has a lot of water resources, unfortunately the rivers level is to low than that of land, mechanical facilities are not available to make use of water, therefore major portion of the cultivable land cannot be irrigated.

2. Incidence of animal and plant diseases, as well as locust causes loss of productivity, shortage of improved seeds and fertilizers can also be a reason for economic backwardness.

3. About 80% of Badakhshan's population is busy with agriculture which involves 443499 people for each person 0.432 hectares land will be available for cultivation including both irrigated and rain-fed land.

4. Cultivable land is cultivated every alternative year because of the unavailability of enough water for irrigation as well as fertilizer, once again reduces 50% of the annual productivity.

VI. **Livestock situation in Badakhshan:**

There is no definite data of livestock census of Badakhshan, different sources gives different information. One could see that there are quite a lot number of livestock in the province but there is difficult winter feed, that is why the animals are mostly raised for marketing purposes, it is also observed that even the productive animals are moved into a distant pasture at summer time and there will be no chance of the consumption of their products like milk by the families. Soon after the animals are grown up they will be sold in market to get money and provide their required food stuff and other needed materials. Therefore their is deficiency of protein in their food, the population will face to the danger of the occurrence of various fatal diseases because of their low body resistance. Sub normal physical and mental development in children, reduced working capacity in adults as well as high rate of mortality in children as a result of mall-nutritive food there is chance of occurrence of some infectious diseases for example Tuberculosis as reported oftenly all over the province as a prevalent disease in human being.

It is worth mention that as a result of low economic level of Badakhshan society along with possibly less utilization of meat and milk the best source of protein would the poultry meat and eggs which is not enough to cover the body requirement for protein by the last two items only.

Because of the absence of roads and properly connected ways between different districts and villages approach to socio-economic affair is difficult, even though many international NGOs and organizations have tried their best for their projects implementation in various fields with good results but as said constraints present as environmental affects, it still require much more efforts to improve the situation to a possible extent.

According to the technical field reports received from our VFU areas in Faizabad, Baharak and Kishim district, various infectious and non-infectious disease of animals are noticed to be present as endemic disease occurring sporadically in different seasons of the year. Such as:

1. In cattle: Anthrax, FMD, BQ, HS, TB, Mastitis etc.

2. In sheep and goats: Anthrax, Enterotoxemia, Sheep and goat pox, Foot rott, FMD, HS, etc.
3. In poultry: New castle disease CRD, Pox, etc.

These only 3 vet.clinics will not be able to cover all 13 districts services unless the number is increased.

VII. Recommendation:

1. Based on FAO policy on Animal Health and Livestock Production Program establishment of 10 other vet.clinics by PRB beside previous established 3 clinics to cover all 13 districts in consideration to geographical situation as recommended in 1995.

2. Establishment of livestock improvement activities by implementation of AI/inbreeding programs.

3. Extending extension services and providing informal education to farmers and animal owners about animal health, production and management.

4. Provision of Apiculture program and managing short term training programs in continuation of some work done by Afghanaid in this field.

5. Provision of Sericulture training and developing program and its distribution.

6. Provision of women BVW (Basic Veterinary Worker) program under women development program.

7. Provision of preventive measures for wild life such as yak.

8. Provision of Horticulture development program.

9. Provision of vocational training program to improve skill efficiency for self sustainable program.

10. Provision of training courses through skilled local women to improve and increase handicraft production under women development program.

11. Provision of emergency programs to overcome the problem of malnutrition.

12. Provision of infrastructure and public utility building.

13. Provision of initiating and supporting poultry farming and raising program specially under women development program.

Pamir Reconstruction Bureau

(PRB)

Animal Health & Livestock Production Department

Study on the Nutritional Aspect of Badakhshan Province Afghanistan

May, 1996

Peshawar, Pakistan